

CLAIMS

What is claimed as new and desired to be protected by Letters Patent of the United States is:

1. A method of encoding an analog video signal, comprising the acts of:

providing a digital video signal including content and data pertaining to control of subsequent uses of the content;
converting the digital video signal to an analog video signal;
extracting the data from the digital video signal;
generating signals modifying at least one characteristic in blanking intervals of the analog video signal from the extracted data to define an encoded pattern corresponding to the data, wherein each of the modified characteristics is of the type to inhibit making an acceptable analog recording of the video signal;
and
using the generated signals to modify the analog video signal.

2. The method of Claim 1, wherein there are two of the characteristics, a first being in the horizontal blanking intervals and a second being in the vertical blanking intervals.

3. The method of Claim 1, wherein the characteristics are selected from a group consisting of: a phase of the color burst, the presence of paired negative and positive going pulses, and the presence of a positive going pulse in back porches of horizontal synchronization signals.

4. The method of Claim 3, wherein the phase of the color burst is modified in a repeated pattern of 2 or 4 scan lines of the video signal.

5. The method of Claim 1, wherein the at least one characteristic defines the encoded pattern which specifies:
an off state;
an indication of allowing digital storage; and

an indication of how long to allow the digital storage.

6. The method of Claim 1, wherein the at least one characteristic defines the encoded pattern indicating for how long to allow subsequent digital storage.

7. The method of Claim 1, wherein the method is carried out in a set top box, DVD player, or playback device.

8. The method of Claim 1, wherein the uses include one of:
transmitting the video signal across a network;
displaying the video signal at a particular resolution or quality level;
storing the video signal in digital form; and
moving the video signal from a first to a second digital storage device.

9. The method of Claim 1, wherein the video signal includes audio.

10. The method of Claim 1, wherein the at least one characteristic is a pulse added to a back porch of a predetermined number of horizontal synchronization pulses in a vertical blanking interval of the video signal.

11. The method of Claim 10, wherein the predetermined number is less than six.

12. The method of Claim 10, wherein the predetermined number is insufficient to inhibit making an acceptable analog recording.

13. The method of Claim 10 wherein the predetermined number defines the encoded pattern.

14. The method of Claim 10, wherein the predetermined number is in the range of zero to fifteen both prior to and after the vertical synchronization pulse of the vertical blanking interval.

15. A video encoding apparatus, comprising:
a port adapted to receive a digital video signal;
a digital to analog converter coupled to the port to receive the digital video signal;
an extractor circuit coupled to the port thereby to extract from the digital video signal data pertaining to subsequent uses of content of the digital video signal;
control circuitry coupled to the extractor circuit and which generates signals modifying at least one characteristic in blanking intervals of the analog video signal responsive to the extracted data, wherein each of the modified characteristics is of the type to inhibit making an acceptable analog recording of the video signal; and
a combiner coupled to an output terminal of the digital to analog converter and to the control circuitry thereby to provide an encoded analog video signal.

16. The apparatus of Claim 15, wherein there are two of the characteristics, a first being in the horizontal blanking intervals and a second being in the vertical blanking intervals.

17. The apparatus of Claim 15, wherein the characteristics are selected from a group consisting of: a phase of the color burst, the presence of paired negative and positive going pulses, and the presence of a positive going pulse in back porches of horizontal synchronization signals.

18. The apparatus of Claim 17, wherein the phase of the color burst is modified in a repeated pattern of 2 or 4 scan lines of the video signal.

19. The apparatus of Claim 15, wherein the at least one characteristic defines the encoded pattern which specifies:
an off state;
an indication of allowing digital storage; and
an indication of how long to allow the digital storage.

20. The apparatus of Claim 15, wherein the at least one characteristic defines the encoded pattern indicating for how long to allow subsequent digital storage.

21. The apparatus of Claim 15, wherein the apparatus is a set top box, DVD player, or playback device.

22. The apparatus of Claim 15, wherein the at least one characteristic is a pulse added to a back porch of a predetermined number of horizontal synchronization pulses in a vertical blanking interval of the video signal.

23. The apparatus of Claim 22, wherein the predetermined number is less than six.

24. The apparatus of Claim 22, wherein the predetermined number is insufficient to inhibit making an acceptable analog recording.

25. The apparatus of Claim 24 wherein the predetermined number defines the encoded pattern.

26. The apparatus of Claim 22, wherein the predetermined number is in the range of zero to fifteen both prior to and after the vertical synchronization pulse of the vertical blanking interval.

27. A method of processing a video signal, comprising the acts of:
receiving an analog video signal with at least one characteristic in its blanking intervals modified to define an encoded pattern corresponding to data relating to subsequent digital use of the video signal, wherein the modified characteristic also is of the type to inhibit making an acceptable analog recording of the video signal;

detecting the characteristic;

converting the received analog video signal to a digital video signal; and

using the detected characteristic to determine subsequent uses of the digital video signal.

28. The method of Claim 27, wherein there are two of the characteristics, a first being in the horizontal blanking intervals and a second being in the vertical blanking intervals.

29. The method of Claim 27, wherein the characteristics are selected from a group consisting of a phase of the color burst, the presence of paired negative and positive going pulses, and the presence of a positive going pulse in back porches of horizontal synchronization signals.

30. The method of Claim 29, wherein the phase of the color burst is modified in a repeated pattern of 2 or 4 scan lines of the video.

31. The method of Claim 27, wherein the at least one characteristic defines the encoded pattern which specifies:

- an off state;
- an indication of allowing digital storage; and
- an indication of how long to allow the digital storage.

32. The method of Claim 27, wherein the at least one characteristic defines the encoded pattern indicating for how long to allow subsequent digital storage.

33. The method of Claim 27, wherein the method is carried out in one of a set top box, a video recorder, or a personal computer.

34. The method of Claim 27, further comprising the act of storing the digital video signal.

35. The method of Claim 34, further comprising the act of converting the digital signal to MPEG format prior to the act of storing.

36. The method of Claim 34, further comprising the acts of compressing and encrypting the digital signal prior to the act of storing.

37. The method of Claim 34, further comprising the act of deleting the stored video or disabling further usage of the video at the expiration of a time determined by the encoded pattern.

38. The method of Claim 36, further comprising the act of preventing decryption of the stored video at the expiration of a time determined by the encoded pattern.

39. The method of Claim 34, further comprising the acts of:
converting the stored digital video signal to an output analog video signal;
and
modifying the characteristic in the output analog video signal thereby to inhibit making an acceptable video recording therefrom.

40. The method of Claim 27, wherein the uses include one of:
transmitting the video signal across a network;
displaying the video signal at a particular resolution or quality level;
storing the video signal in digital form; and
moving the video signal from a first to a second digital storage.

41. The method of Claim 27, wherein the video signal includes audio.

42. The method of Claim 27, wherein the at least one characteristic is a pulse added to a back porch of a predetermined number of horizontal synchronization pulses in a vertical blanking interval of the video signal.

43. The method of Claim 42, wherein the predetermined number is less than six.

44. The method of Claim 42, wherein the predetermined number is insufficient to inhibit making an acceptable analog recording.

45. The method of Claim 42, wherein the predetermined number defines the encoded pattern.

46. The method of Claim 42, wherein the predetermined number is in the range of zero to fifteen both prior to and after the vertical synchronization pulse of the vertical blanking interval.

47. A video decoding apparatus, comprising:
a port adapted to receive an analog video signal;
a detector coupled to the port and which detects modifications to at least one characteristic in blanking intervals of the analog video signal;
a control circuit coupled to an output terminal of the detector and which provides a control signal in response to detection of an encoded pattern defined by the modified characteristic;
an analog to digital converter coupled to the port to receive the analog video signal;
a decoder coupled to an output terminal of the analog to digital converter;
and
a combiner coupled to an output terminal of the decoder and to receive the control signal from the control circuit, thereby to output a digital video signal including data indicating its subsequent uses.

48. The apparatus of Claim 47, wherein the analog to digital converter is coupled between the port and the detector.

49. The apparatus of Claim 48, wherein the detector is coupled to receive the analog video signal in analog form.

50. The apparatus of Claim 47, further comprising a storage device coupled to store the video signal in digital form.

51. The apparatus of Claim 47, wherein the decoder is an MPEG decoder.

52. The apparatus of Claim 47, further comprising:
a compression circuit coupled to receive the encoded video signal; and
an encryption circuit coupled to receive the compressed video signal.

53. The apparatus of Claim 47, wherein there are two of the characteristics, a first being in the horizontal blanking intervals and a second being in the vertical blanking intervals.

54. The apparatus of Claim 47, wherein the characteristics are selected from a group consisting of: a phase of the color burst, the presence of paired negative and positive going pulses, and the presence of a positive going pulse in back porches of horizontal synchronization signals.

55. The apparatus of Claim 54, wherein the phase of the color burst is modified in a repeated pattern of 2 or 4 scan lines of the video.

56. The apparatus of Claim 47, wherein the at least one characteristic defines the encoded pattern which specifies:

an off state;
an indication of allowing digital storage; and
an indication of how long to allow the digital storage.

57. The apparatus of Claim 47, wherein the at least one characteristic defines the encoded pattern indicating for how long to allow subsequent digital storage.

58. The apparatus of Claim 47, wherein the apparatus is in one of a set top box, a video recorder, or a personal computer.

59. A record carrier having material recorded thereon, the recorded material comprising:

a video signal including in its blanking intervals at least one modified characteristic defining an encoded pattern corresponding to data relating to subsequent uses of the video signal;

wherein the modified characteristic is of the type to inhibit making an acceptable analog recording of the video signal.

60. The carrier of Claim 59, wherein there are two of the characteristics, a first being in the horizontal blanking intervals and a second being in the vertical blanking intervals.

61. The carrier of Claim 59, wherein the characteristics are selected from a group consisting of: a phase of the color burst, the presence of paired negative and positive going pulses, and the presence of a positive going pulse in back porches of horizontal synchronization signals.

62. The carrier of Claim 61, wherein the phase of the color burst is modified in a repeated pattern of 2 or 4 scan lines of the video signal.

63. The carrier of Claim 59, wherein the at least one characteristic defines the encoded pattern which specifies:

an off state;

an indication of allowing digital storage; and

an indication of how long to allow the digital storage.

64. The carrier of Claim 59, wherein the at least one characteristic defines the encoded pattern indicating for how long to allow subsequent digital storage.

65. The carrier of Claim 59, wherein the carrier is a video disc or video tape.

66. The carrier of Claim 59, wherein the carrier is a video disc carrying a plurality of bits indicating the modified characteristic.

67. The carrier of Claim 59, wherein the at least one characteristic is a pulse added to a back porch of a predetermined number of horizontal synchronization pulses in a vertical blanking interval of the video signal.

68. The carrier of Claim 67, wherein the predetermined number is less than six.

69. The carrier of Claim 67, wherein the predetermined number is insufficient to inhibit making an acceptable analog recording.

70. The carrier of Claim 67, wherein the predetermined number defines the encoded pattern.

71. The carrier of Claim 67, wherein the predetermined number is in the range of zero to fifteen both prior to and after the vertical synchronization pulse of the vertical blanking interval.